Space Weather Forecast

Issued on Wednesday, 12 January 2022 at 00:43 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of G1/Minor Storms day 4 (15th).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was low with one common flare observed, This was from a "plage" region, which is a small bright area on the Sun which can occasionally be left over by the decay of old sunspots. In this case sunspots were visible in this area on the previous solar rotation. There are four sunspot regions on the visible disc. The largest of these is a spread out but magnetically simple bipolar region, that has displayed very little activity. There are two unipolar sunspots, which are the mature and inactive remains of previous spots. There is also another bipolar sunspot, which are redeveloped spots in an old region, but is currently small and simple. No Earth-directed coronal mass ejections (CMEs) have been observed.

Solar Wind / Geomagnetic Activity: Solar winds speeds are currently at or near background levels. The total magnetic field strength carried by the wind has remained weak, with no notable strength in the important north-south direction. Geomagnetic activity was Quiet.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be Low to Very Low. There is an increasing, but still slight chance, of this becoming Moderate by day 4 (15th) as sunspot regions currently on the far side rotate onto the Earth-side.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Background solar winds are expected to persist until the arrival of the fast winds of a coronal hole later in the period. This is most likely to occur on day 4 (15th). Mainly Quiet geomagnetic activity until this arrival, becoming Unsettled to Active with a chance of G1/Minor Storm intervals thereafter.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	5	30
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	5	10	10	15
Very Active	R3 to R5 X	No	1	1	2	2

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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